

# PET  
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PATENT APPLICATION

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of

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Vigen ARAKELYAN

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For: DEVICE FOR BLOW-MOLDING OR STRETCH BLOW-MOLDING OF  
THERMOPLASTIC CONTAINERS

SUBMISSION OF EXECUTED DECLARATION

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Commissioner for Patents  
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Alexandria, VA 22313-1450

Sir:

In view of the application filed on December 8, 2004 without the appropriate executed documents, and since Applicant's attorney has not yet received the "Notification of Missing Requirements Under 35 U.S.C. 371 in the United States Designated/Elected Office (DO/EO/US)," for the above application, Applicant submits herewith a copy of the Declaration for the above identified application properly executed by the inventors.

A check for the statutory fee of \$130.00 is attached. The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account. A duplicate copy of this paper is attached.

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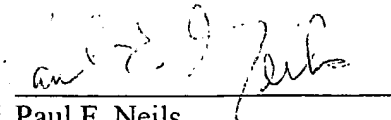
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23373

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**DEVICE FOR BLOW-MOLDING OR STRETCH BLOW-MOLDING OF  
THERMOPLASTIC CONTAINERS**

The present invention relates to improvements made to  
5 the devices for blow-molding or stretch blow-molding of  
containers starting from preforms made of  
thermoplastic, said devices comprising a mold in three  
parts, namely two half-molds for the body of the  
10 container and a mold base for the base of the  
container, the lower parts of the two half-molds and  
the upper part of the mold base comprising means which  
can interlock, in the closed position of the mold, to  
provide the axial rigidity of the mold in the presence  
of the blow-molding pressure, the two half-molds being  
15 designed to be moved relative to one another, between  
an open position and a closed position, under the  
action of actuating means controlled by a fixed cam,  
this device comprising connection means between at  
least one half-mold and/or said means for actuating  
20 said half-molds, on the one hand, and the mold base, on  
the other hand, so that the movement of the mold base  
is controlled by the movement of at least one half-mold  
and/or said actuating means such that:

- during opening of the mold, said actuating means  
25 start to move said half-molds apart until said  
interlockable means are freed from one another,  
while said connection means remain inoperative and  
the mold base remains in its position, and then,  
while said actuating means continue to move the  
30 two half-molds apart, the connection means become  
operational and move the mold base so as to  
separate it axially from said half-molds;

and such that

- during closing of the mold, said actuating means  
35 start to bring the two half-molds together at the  
same time as said connection means control the  
axial movement of the mold base until it reaches  
its completely raised position, and then, with

said connection means becoming inoperative, said actuating means finish bringing the two half-molds together, with engagement with the interlockable means mechanically and axially securing the two  
5 half-molds and the mold base.

For blow-molding or stretch blow-molding of containers such as bottles starting from heated preforms made of thermoplastic, such as PET, it is known practice to use  
10 molds consisting of two half-molds which can move relative to one another between an open position (loading/unloading of the mold) and a closed position (blow-molding or stretching/blow-molding). In particular, it is known practice to design the two  
15 half-molds in such a way that they can rotate relative to one another (hinged molds). Many embodiments of such molds, with their closing means and their means for locking them in the closed position, are known (see, for example, FR 2 646 802, FR 2 653 058, FR 2 659 265,  
20 FR 2 681 552, FR 2 733 176, FR 2 793 722, all in the name of the Applicant).

Constructing the mold as only two half-molds is possible when the container to be manufactured has a  
25 relatively simple shape and can be easily extracted from the mold. This is particularly the case when the base of the container does not have pronounced reliefs (semicircular base or flat base, for example).

30 The two half-molds are actuated mechanically during closing and opening with the aid of a roller, attached to the half-molds by transmission means, which engages with a cam arranged laterally and having the required profile. There is often a set of several molds mounted  
35 on a common rotating support (carousel) and the cam is mounted laterally as a fixed cam.

By contrast, when, as is found in the majority of cases, the base has a complex configuration (petaloid

base or rounded base with an inwardly directed convexity, for example), it is not possible, without deformation and therefore without damage, for the container to be extracted from a mold in two parts.

5 That is why use is made of molds in three parts to manufacture such containers having bases of complex shape, these molds comprising two half-molds which can be moved apart/brought together (rotatably articulated, in particular) for molding the body of the container,

10 and a mold base which can be moved axially for molding the base of the container.

As is thus conventional, the actuation of the mold base is passed over to specific means which are equipped

15 with their own roller engaging with a separate cam.

It should additionally be emphasized that, in order to mechanically reinforce the mold when it is subjected to the blow-molding pressure, a means of mechanically

20 securing the two half-molds and the mold base when the mold is in the closed position has been provided. To this end, the lower part of the two half-molds and the upper part of the mold base are mutually overlapping and are equipped with interlockable means, such as, for

25 example, peripheral groove/peripheral projection, for example in the form of an annular projection fitting into the groove. As a result, the axial movement of the mold base can only take place when the two half-molds are in a sufficiently parted position in which the

30 interlocked means are released. It is therefore necessary for the movements of the half-molds and of the mold base to take place in a highly precise sequence.

35 These requirements lead to the necessity of a rigorous relative positioning of the two cams respectively controlling the movements of the half-molds and of the mold base, with the use of adjusting means for ensuring the required precision of this relative positioning.

Finally, the current design of the molding devices with a mold in three parts, employing two cams controlling the movements of the half-molds and of the mold base  
5 respectively, proves to be complex and space-consuming owing to the presence of the double actuating means, and costly to install and to maintain in order to ensure the correct mutual positioning of the two cams, on which the perfect synchronism of the movements of  
10 the three constituent parts of the mold is dependent.

To that should be added the problems caused, within rotating systems having multiple molds, by the rollers coming into contact with the fixed cams mounted  
15 laterally and by the rebound phenomena which ensue and which generate considerable vibration. Now, in a current three-part mold arrangement, there are at least two rollers which come into contact with two respective cams for each mold, which leads to a cumulation of the  
20 vibratory phenomena.

The search for increasingly higher operating speeds, leading to increasingly greater production rates, not only leads one to strive to achieve a structural  
25 simplification enabling inertia to be reduced but also to reduce as completely as possible the vibratory phenomena accompanying the rollers when they come into contact with the corresponding cam.

30 It is against this background that the invention proposes improving the molding device presented in the preamble, which, being arranged in accordance with the invention, is characterized in that the connection means comprise a connecting rod whose ends are provided  
35 with coupling means having three rotational degrees of freedom so as to connect it to the half-mold and/or to said means for actuating said molds and so as to connect it to the mold base, respectively, and in that the connection of the rod with the mold base is

arranged so as, during opening of the mold, to pivot freely under the entraining action of the aforesaid half-mold and/or of said means for actuating said half-molds while the two half-molds are parting until a  
5 predetermined angular value is obtained, and then to bear against an abutment attached to the mold base when the half-molds are parting at said angular value and/or when said actuating means are in a position in which the half-molds are parting at said angular value, and  
10 finally to push the mold base away axially when the two half-molds complete their opening travel, and vice versa during closing of the mold.

Preferably, because it seems to be the simplest to  
15 implement, provision is made for said connection means to be interposed between one of the half-molds and the mold base. In particular, when each half-mold consists of a half-mold-carrier unit detachably supporting a metal block in which a half-cavity of the container  
20 body is machined, it is preferable for the connection means to be interposed between a mold-carrier unit and the mold base. Likewise, when the mold base comprises a block which is interchangeable to suit the shape of the container, which block is solidly attached to a  
25 supporting structure, it is then preferable for the connection means to be interposed between one of the half-molds (or one of the mold-carrier units) and the supporting structure.

30 By virtue of these provisions, it is possible to dispense with the independent means for actuating the mold base, which, on the one hand, simplifies the overall architecture of the machine and, on the other hand and above all, prevents the long and minute  
35 adjustments required for the correct mutual positioning of the two cams. Moreover, each mold now constitutes a complete functional unit which is mounted and installed as such and which is associated only with a single source of movement in the form of the single cam.

Finally, and this is not the least of the advantages, dispensing with the independent control of the mold base with its own cam makes it possible to considerably reduce the vibration-related problems mentioned above.

5 It thus becomes possible to envisage operating such a device at substantially higher speeds than those used to date.

In a simple manner, the aforesaid coupling means having

10 three rotational degrees of freedom are preferably spherical ball joint couplings or comprise, for one of them, a spherical ball joint coupling and, for the other, a universal coupling.

15 In a simple exemplary embodiment, the lower end of the rod is connected via said spherical ball joint coupling to a link rotatably articulated on a radial arm attached to the mold base, said abutment consisting of a portion of said arm.

20 Although it is possible to envisage various configurations, it is nevertheless advantageous to arrange for the link to be articulated on the radial arm by a pin perpendicular to the axis of the mold;

25 provision can then be made in particular for the link to be made in the form of a solid shoe to which the respective coupling is connected.

Advantageously, elastic return means are coupled to the

30 mold base to assist the axial movement of the mold base from its open position to its closed position.

By virtue of the provisions according to the invention, it is possible to set up a simple structure employing

35 only a small number of component parts which do not include any frictional parts, which avoids wear and eliminates the appearance of play. The forces transmitted are relatively small and the relatively low masses of the moving parts lead to low inertia: such a

mechanism is therefore capable of operating at high speeds, making it conceivable to raise the operating speeds of the molding installation.

5 Constructing the moving link in the form of a solid shoe leads to a mechanically strong structure capable of withstanding, without deformation, the thrust impacts marking the transition between the movement of the half-molds alone and the movement of the half-molds  
10 accompanied by the axial movement of the mold base.

Finally, although the hinge pin of the link, or of the shoe, is advantageously perpendicular to the axis of the mold, the position of this axis is in truth  
15 immaterial: it follows that the positioning of the radial arm does not have to be of very high precision, which simplifies the construction.

The provisions of the invention find a preferred,  
20 although not exclusive, application in the molding devices having a mold of the hinged type in which the two half-molds are mutually pivoting.

The invention will be better understood on reading the  
25 detailed description which follows of certain preferred embodiments given solely by way of nonlimiting examples. In this description, reference will be made to the attached drawings, in which:

- figure 1 is a simplified schematic view, in  
30 axial section, of a mold in three parts toward which the invention is directed;

- figures 2A to 2C are perspective views showing one of the half-molds of figure 1 equipped according to the invention in three different operational positions  
35 respectively;

- figure 3 is a perspective view illustrating a variant of the arrangements shown in figures 2A to 2C; and

- figure 4 is a perspective view illustrating a



variant of the arrangements shown in figure 3.

Referring first of all to figure 1, the invention aims to improve the devices for blow-molding or stretch  
5 blow-molding of containers starting from preforms made of thermoplastic, such as PET, which comprise a mold 1 in three parts, namely two half-molds 2 and a mold base 3.

10 The two half-molds 2 each include an imprint 4 of half the body of the container to be manufactured (for example a bottle) and can be moved apart or brought together transversely. In the example illustrated, the two half-molds are designed with external lugs 6 so  
15 that they can be mounted on a common pin 5 and can be closed or opened by rotation about this pin (hinged mold). If the half-molds comprise respective mold-carrier units, the lugs 6 are formed on the latter. However, the improvements made by the  
20 invention, which will be explained later, may nevertheless be employed with molds of different design, for example with half-molds which can move by transverse translation.

25 Traditionally, the opening and closing of the half-molds 2 is controlled mechanically, by means consisting of articulated arms driven by a roller engaging with a fixed cam. Such means, not shown in figure 1, are described and illustrated, for example, in documents  
30 FR 2 653 058, FR 2 681 552 or FR 2 793 722.

The mold base 3, the third part of the mold 1, comprises the complex-shaped imprint 7 of the base of the container to be manufactured and can be moved  
35 axially along the axis 8 of the mold (axis of the container to be manufactured).

To provide a mechanical assembly of the mold base 7 with the two half-molds, in the closed position of the

mold, which is capable of withstanding the forces generated by the high blow-molding pressure (for example  $40 \times 10^5$  Pa), a secure connection is provided by interlockable means, such as groove/projection means.

5 In the example illustrated in figure 1, the mold base 3 comprises a radial projection 9 extending over all or part of the lateral periphery of the mold base, in the upper part thereof covered by the lower parts of the half-molds 2; for their part, the half-molds 2 are each  
10 provided with a mating groove 10.

In such a configuration, it is necessary, in order to open the mold, to start opening the half-molds 2 on their own, the mold base 3 remaining in place, until  
15 the grooves 10 have freed the projection 9; then, and only then, can the mold base 3 be moved axially while the half-molds 2 complete their respective movements. In order to close the mold, it is necessary, conversely, to return the mold base 3 axially while the  
20 half-molds 2 begin their movement toward one another, so that the mold base 3 is in place while the two half-molds 2 complete their movement toward one another and while the grooves 10 cover the projection 9.

25 In order to eliminate the specific roller/fixed cam control used up until now for moving the mold base 3 and to avoid the difficulties brought about by the mutual positioning adjustments of the two cams controlling the half-molds 2 and the mold base 3,  
30 respectively, so as to obtain perfect synchronization of the movements described above, connection means are provided between at least one half-mold and/or said means for actuating the half-molds 2, on the one hand, and the mold base 3, on the other hand, so that the  
35 above-described sequences of synchronized movements of the half-molds 2 and of the mold base 3 are retained both during the opening and closing of the mold.

According to the invention, provision is made for the

connecting means to comprise a connecting rod 13 whose ends are provided with coupling means having three rotational degrees of freedom so as to connect it to the half-mold and/or to said means for actuating said half-molds and so as to connect it to the mold base, respectively, and the connection of the rod 13 with the mold base 3 is arranged so as, during opening of the mold, to pivot freely under the entraining action of the aforesaid half-mold and/or of said means for actuating said half-molds while the two half-molds are parting until a predetermined angular value  $\alpha$  is obtained, and then to bear against an abutment attached to the mold base 3 when the half-molds 2 are parting at said angular value  $\alpha$  and/or when said actuating means are in a position in which the half-molds are parting at said angular value  $\alpha$ , and finally to push the mold base 3 away axially when the two half-molds 2 complete their opening travel, and vice versa during closing of the mold.

A simple embodiment consists in interposing said connection means between one of the half-molds and the mold base, and in arranging them in the following way, for example.

Figure 2A shows an external view of one of the half-molds 2 (there can be seen the lugs 11 on which are articulated the actuating arms (not shown) driven by the roller moved by the fixed cam discussed above).

The connection means 12 interposed between the half-mold 2 and the mold base 3 comprise a connecting rod 13 provided at its two ends with spherical ball joints in order to respectively constitute a coupling 14 with the half-mold 2 and a coupling 15 with the mold base 3.

Preferably, the two couplings 14, 15 are ball joint couplings. If appropriate, one of the ball joints may

be replaced by a universal joint; alternatively, one or both of these couplings may be replaced by any device providing the three degrees of freedom required to perform the abovementioned sequences.

5

The coupling 14 is situated on the outer wall of the half-mold 2, at a point on this wall which is relatively distant from the axis of rotation of the pin 5, so as to benefit from sufficient amplitude of movement.

10

The coupling 15 is advantageously provided not on the mold base itself but on the end of a radially extending arm 16 attached to the mold base 3, so that the rod 13 extends approximately parallel to the contact face 17 (parting line) of the half-mold 2.

15

In order for the movements indicated above to be broken down sequentially, the coupling 15 is attached to a moving part or link 18 which, in the example illustrated in figure 2A, is produced in the form of a solid shoe housing the spherical socket accommodating the spherical ball attached to the rod 13. The shoe 18 is rotatably articulated on the end of the arm 16 by a pin 19 which, in the example illustrated, is substantially perpendicular to the axis 8 of the mold (or to its pivot pin 5).

20

25

Furthermore, elastic return means (spring 20) are associated with the mold base 3 in order to return the latter to the closed position. In figure 2A, the spring 20 is interposed between a frame part 21 of the molding device and a slide 22 attached to the mold base 3 and cooperating with a fixed guide 23 in order to guide the mold base 3 in its axial movement.

30

35

Figure 2A shows the half-mold 2 and the mold base 3 in the closed position (position illustrated also in figure 1).

When starting to open the half-molds 2 by pivoting them about their pin 5, one of these half-molds causes, by way of the rod 13, the shoe 18 to rotate about its pin 19, as illustrated in figure 2B. However, the articulated connection between the shoe 18 and the arm 16 is designed in such a way (for example, as illustrated, the pin 19 is raised with respect to the arm and the shoe 18 possesses a lower face having a cant 24) that the shoe 18 can rotate freely.

Consequently, during this phase of movement of the half-molds 2, the mold base 3 is not subjected to any entraining force and it remains in its closed position, retained by the spring 20.

When the two half-molds 2 have passed through a predetermined angular range  $\alpha$  (figure 2B), it is ensured that the grooves 10 have released the projection 9. At that moment, the face 24 of the shoe 18 comes into contact with a bearing surface 25, forming an abutment, of the arm 16, as illustrated in figure 2B.

From this moment, the shoe 18 continues to be pushed away by the rod 13, but can no longer swivel with respect to the arm 16. The assembly formed by the rod and the shoe thus constitutes a strut bearing on the arm 16 and exerting thereon a downwardly directed force component. The mold base 3 is thus entrained axially in the direction of opening, as illustrated in figure 2C.

In the opposite direction, in order to close the mold, the half-mold 2 entrains, by way of the rod 13, the mold base 3 which arrives in its raised position when the half-mold 2 still has an angular range  $\alpha$  to pass through. At that moment, the shoe 18 leaves its bearing point on the abutment 25 of the arm 16 and, with the mold base 3 then being detached kinematically from the

half-mold 2, the latter completes its closing travel alone, with its groove 10 coming to cover the projection 9 on the mold base. During the first phase of the movement, the return force that the spring 20  
5 exerts on the mold base 3 in order to tend to lift the latter toward its raised position for closing the mold keeps the abutment 25 of the arm 16 in contact with the shoe 18, with the result that the mold base 3 accompanies the movement of the half-mold 2.

10

Of course, numerous variants are conceivable. It should be emphasized in particular that the position of the pin 19 defining the axis of rotation of the shoe 18 is immaterial, which offers the advantage that the  
15 positioning of the arm 16, during the manufacturing operation, does not have to be of high precision. By way of example, figure 3 (in which the mold 1 is shown in its entirety, in perspective, at a different angle of view) illustrates the coupling 15 mounted at the end  
20 of an elongate link 26, itself connected at its other end to the arm 16 attached to the mold base 3 so that this link is able to rotate by means of a pin 27 approximately parallel to the axis 8 of the mold. Similarly, figure 4 illustrates another embodiment  
25 modeled on that of figure 3 and in which the connecting rod 13, constituting the aforesaid connection means, is interposed between the link 26 and an arm 28 (only partly visible) rotatably connected to the lugs 11 (the coupling 14 with the arm 28 being hidden).

## CLAIMS

1. A device for blow-molding or stretch blow-molding of containers starting from preforms made of thermoplastic, said device comprising a mold (1) in three parts, namely two half-molds (2) for the body of the container and a mold base (3) for the base of the container, the lower parts of the two half-molds (2) and the upper part of the mold base (3) comprising means (9, 10) which can interlock, in the closed position of the mold, to provide the axial rigidity of the mold in the presence of the blow-molding pressure, the two half-molds (2) being designed to be moved relative to one another, between an open position and a closed position, under the action of actuating means controlled by a fixed cam, this device comprising connection means between at least one half-mold (2) and/or said means for actuating said half-molds, on the one hand, and the mold base (3), on the other hand, so that the movement of the mold base (3) is controlled by the movement of at least one half-mold (2) and/or said actuating means such that:

- during opening of the mold, said actuating means start to move said half-molds apart until said interlockable means (9, 10) are freed from one another, while said connection means remain inoperative and the mold base remains in its position, and then, while said actuating means continue to move the two half-molds apart, the connection means become operational and move the mold base so as to separate it axially from said half-molds,

and such that

- during closing of the mold, said actuating means start to bring the two half-molds together at the same time as said connection means control the axial movement of the mold base until it reaches

its completely raised position, and then, with said connection means becoming inoperative, said actuating means finish bringing the two half-molds together, with engagement with the interlockable means mechanically and axially securing the two half-molds and the mold base,

characterized in that the connection means comprise a connecting rod (13) whose ends are provided with coupling means having three rotational degrees of freedom so as to connect it to the half-mold and/or to said means for actuating said half-molds and so as to connect it to the mold base, respectively, and in that the connection of the rod (13) with the mold base (3) is arranged so as, during opening of the mold, to pivot freely under the entraining action of the aforesaid half-mold and/or of said means for actuating said half-molds while the two half-molds are parting until a predetermined angular value ( $\alpha$ ) is obtained, and then to bear against an abutment attached to the mold base (3) when the half-molds (2) are parting at said angular value ( $\alpha$ ) and/or when said actuating means are in a position in which the half-molds are parting at said angular value ( $\alpha$ ), and finally to push the mold base (3) away axially when the two half-molds (2) complete their opening travel, and vice versa during closing of the mold.

2. The molding device as claimed in claim 1, characterized in that said connection means are interposed between one of the half-molds (2) and the mold base (3).

3. The molding device as claimed in claim 1 or 2, characterized in that the coupling means having three rotational degrees of freedom are spherical ball joint couplings (14, 15).

4. The molding device as claimed in claim 1 or 2,



characterized in that the coupling means having three degrees of freedom comprise, for one of them, a spherical ball joint coupling and, for the other, a universal coupling.

5

5. The molding device as claimed in claim 3 or 4, characterized in that the lower end of the rod (13) is connected via the respective coupling (15) to a link (18) rotatably articulated on a radial arm (16) attached to the mold base, said abutment consisting of a portion (25) of said arm (16).

6. The molding device as claimed in claim 5, characterized in that the link (18) is articulated on the radial arm (16) by a pin (19) perpendicular to the axis of the mold.

7. The molding device as claimed in claim 5 or 6, characterized in that the link (18) is produced in the form of a solid shoe to which the corresponding coupling (15) is connected.

8. The molding device as claimed in any one of claims 1 to 7, characterized in that elastic return means (20) are coupled to the mold base (3) to assist the axial movement of the mold base from its open position to its closed position.

9. The molding device as claimed in any one of claims 1 to 8, characterized in that the mold (1) is of the hinged type with the two half-molds (2) rotatably articulated relative to one another.

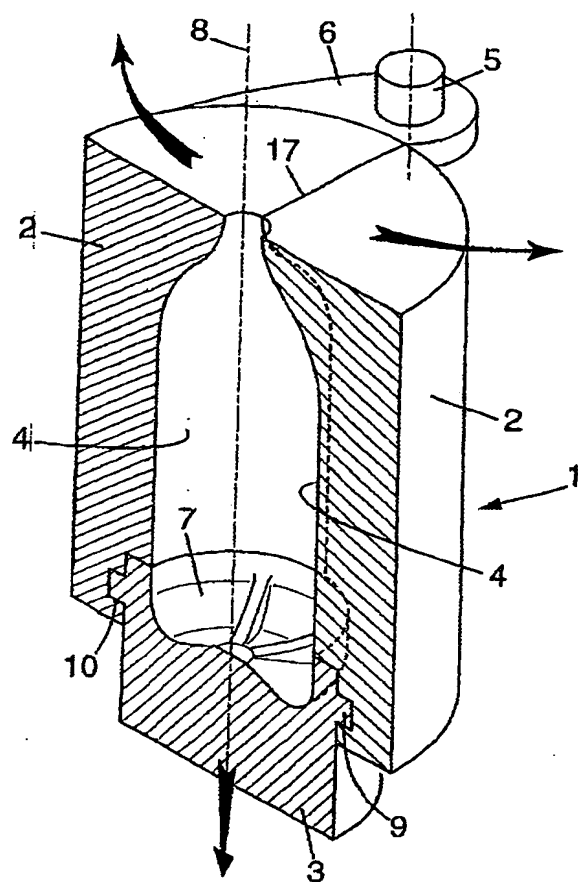


FIG. 1

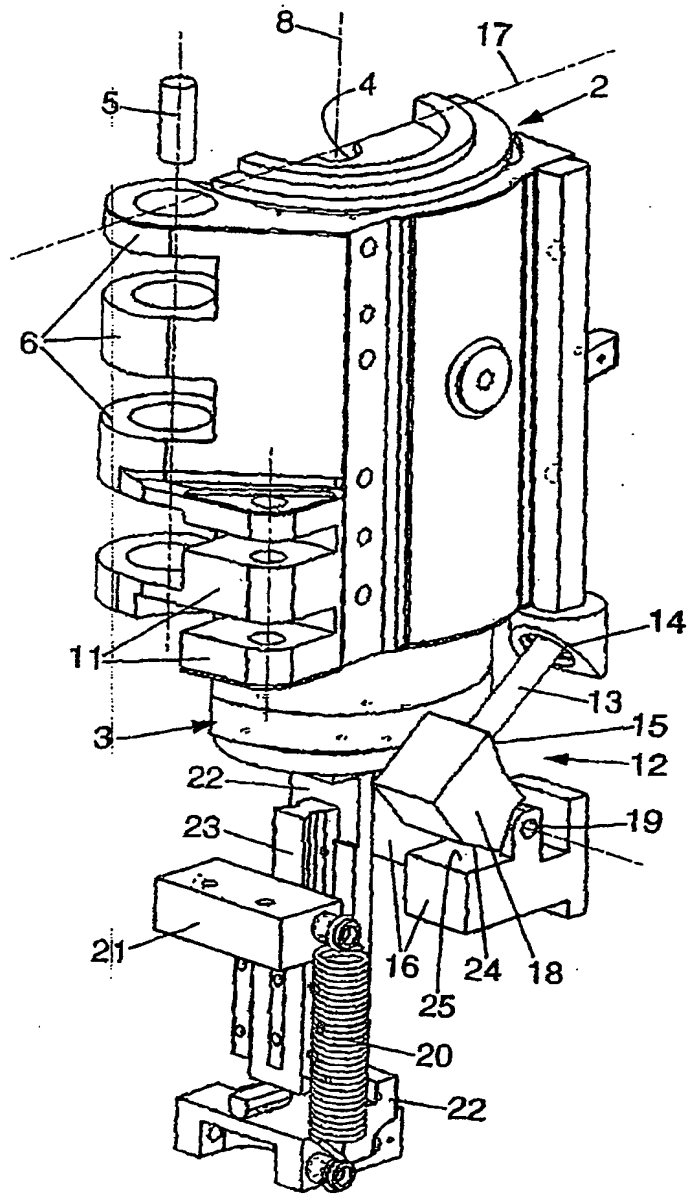


FIG. 2A

3/6

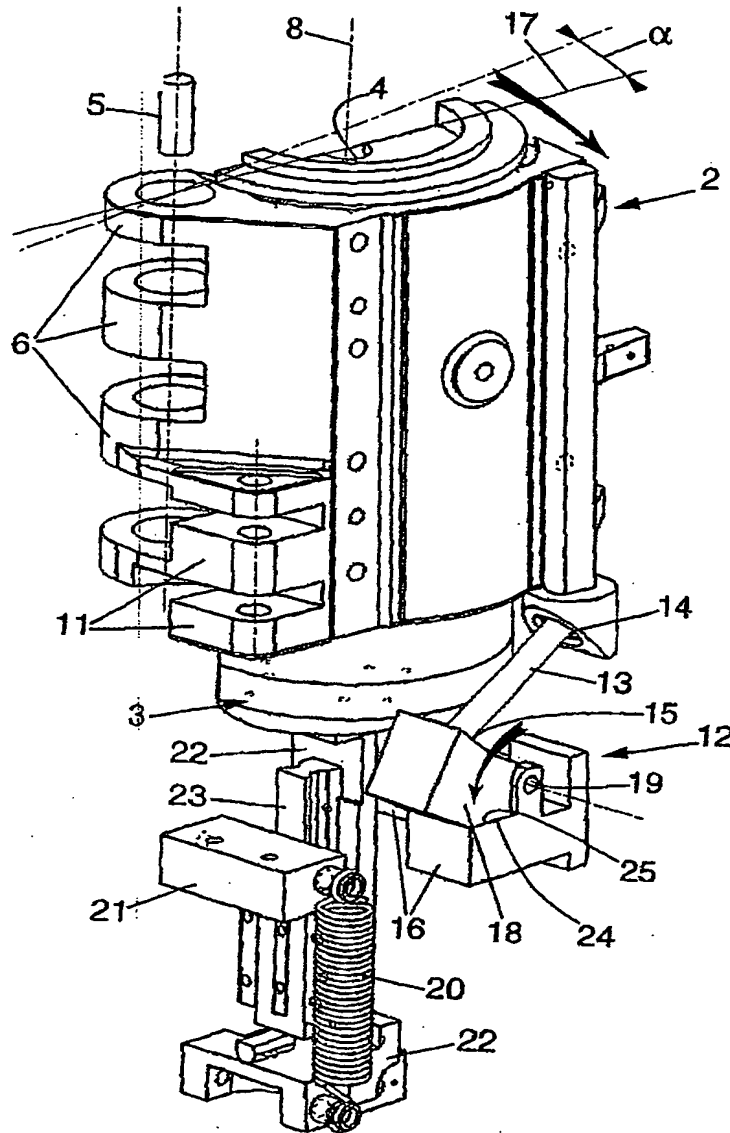


FIG. 2B

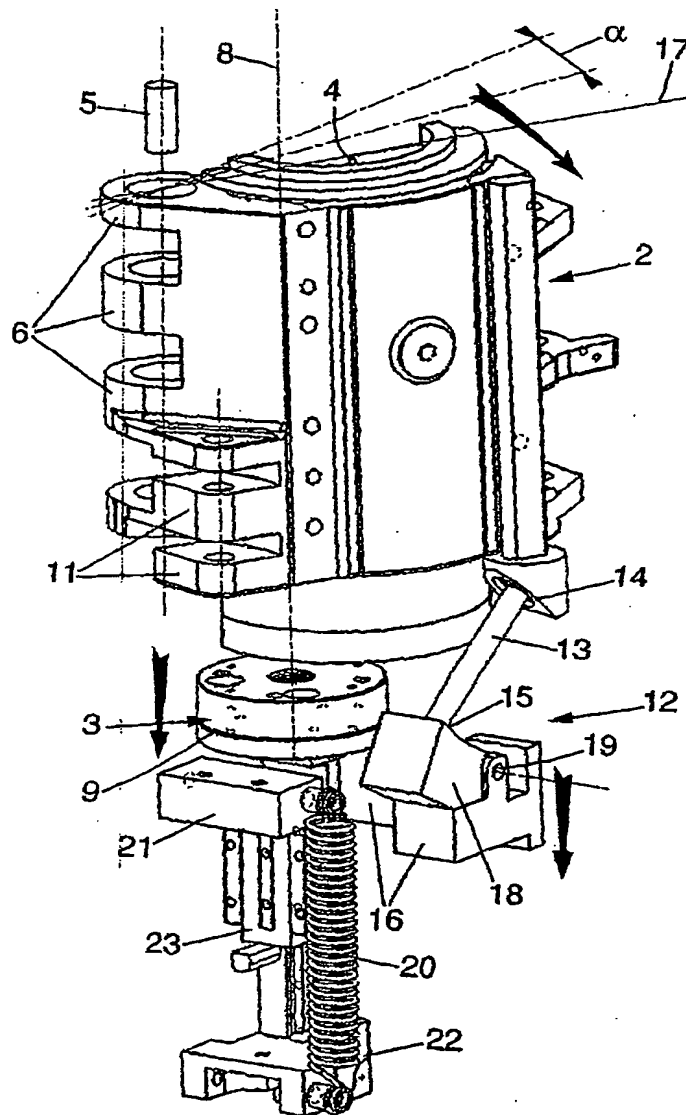
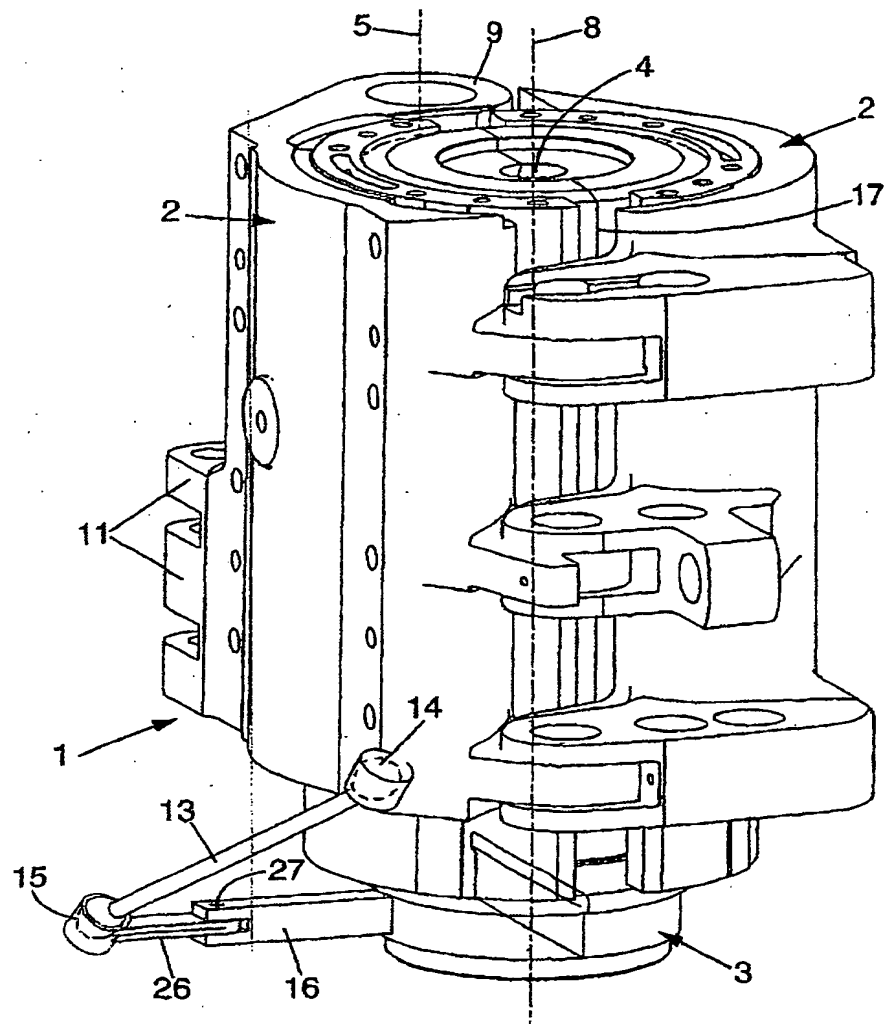


FIG. 2C

**FIG. 3**

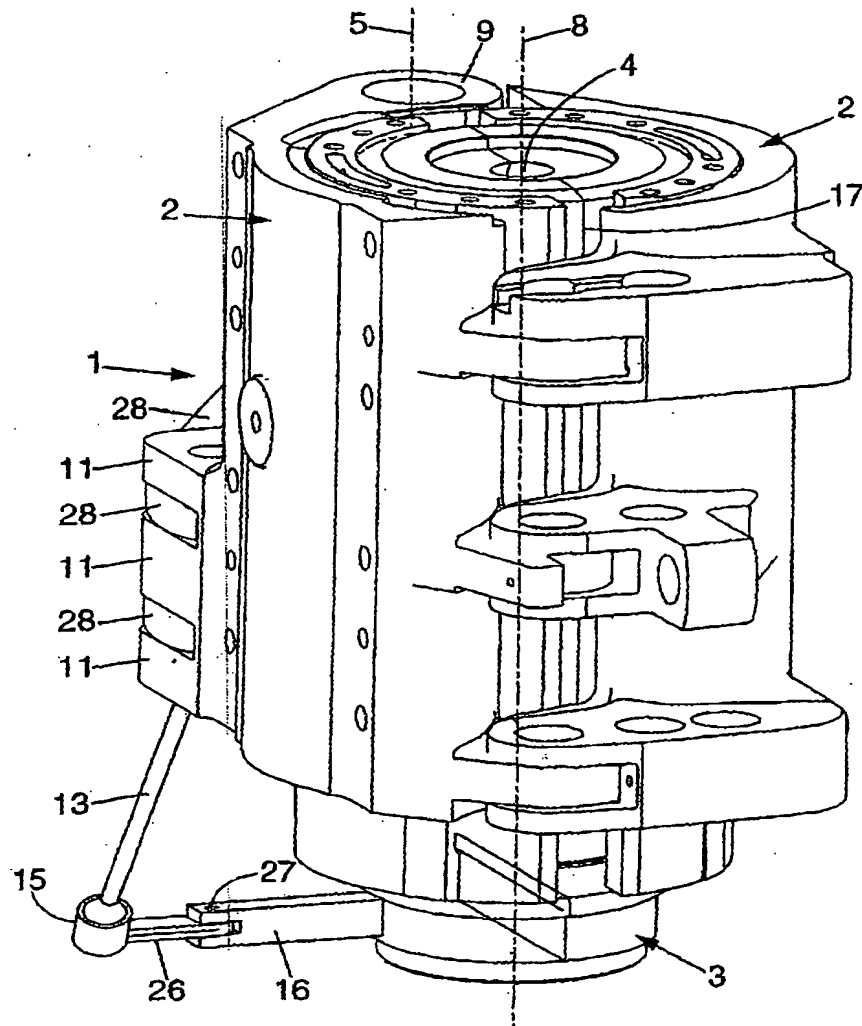


FIG. 4

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**PATENT APPLICATION**

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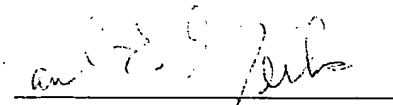
Alexandria, VA 22313-1450

Sir:

In view of the application filed on December 8, 2004 without the appropriate executed documents, and since Applicant's attorney has not yet received the "Notification of Missing Requirements Under 35 U.S.C. 371 in the United States Designated/Elected Office (DO/EO/US)," for the above application, Applicant submits herewith a copy of the Declaration for the above identified application properly executed by the inventors.

A check for the statutory fee of \$130.00 is attached. The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account. A duplicate copy of this paper is attached.

Respectfully submitted,



Paul F. Neils

Registration No. 33,102

SUGHRUE MION, PLLC  
Telephone: (202) 293-7060  
Facsimile: (202) 293-7860

WASHINGTON OFFICE

**23373**

CUSTOMER NUMBER

Date: January 21, 2005

Attorney Docket No.: Q85055

# Declaration and Power of Attorney for Patent Application

## Déclaration et pouvoirs pour demande de brevet

### French Language Declaration

En tant que l'inventeur nommé ci-après, je déclare par le présent acte que :

Mon domicile, mon adresse postale et ma nationalité sont ceux figurant ci-dessous à côté de mon nom

Je crois être le premier inventeur original et unique (si un seul nom est mentionné ci-dessous), ou l'un des premiers co-inventeurs originaux (si plusieurs noms sont mentionnés ci-dessous) de l'objet revendiqué, pour lequel une demande de brevet a été déposée concernant l'invention intitulée

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

et dont la description est fournie ci-joint à moins que la case suivante n'ait été cochée :

a été déposée le \_\_\_\_\_  
sous le numéro de demande des Etats-Unis ou le numéro  
de demande international PCT  
\_\_\_\_\_ (n° de confirmation \_\_\_\_\_)  
et modifiée le \_\_\_\_\_  
\_\_\_\_\_ (le cas échéant).

Je déclare par le présent acte avoir passé en revue et compris le contenu de la description ci-dessus, revendications comprises, telles que modifiées par toute modification dont il aura été fait référence ci-dessus.

Je reconnais devoir divulguer toute information pertinente à la brevetabilité, comme défini dans le Titre 37, § 1.56 du Code fédéral des réglementations.

As a below named inventor, I hereby declare that:

**Vigen ARAKELYAN**

c/o SIDEL avenue de la Patrouille de France  
76930 OCTEVILLE SUR MER France

My residence, mailing address and citizenship are as stated next to my name.

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled

DEVICE FOR BLOW-MOLDING OF STRETCH BLOW-  
MOLDING OF THERMOPLASTIC CONTAINERS

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

the specification of which is attached hereto unless the following box is checked:

was filed on **JUNE 23, 2003**  
as ~~United States Application Number~~ or PCT  
International Application Number  
**PCT/FR03/01918** (Conf. No. \_\_\_\_\_)  
and was amended on \_\_\_\_\_  
\_\_\_\_\_ (if applicable).

I hereby state that I have reviewed and understand the contents of the above identified specification, including the claims, as amended by any amendment referred to above.

I acknowledge the duty to disclose information which is material to patentability as defined in Title 37, Code of Federal Regulations, § 1.56.

## French Language Declaration

Je revendique par le présent acte avoir la priorité étrangère, en vertu du Titre 35, § 119(a)-(d) ou § 365(b) du Code des Etats-Unis, sur toute demande étrangère de brevet ou certificat d'inventeur ou, en vertu du Titre 35, § 365(a) du même Code, sur toute demande internationale PCT désignant au moins un pays autre que les Etats-Unis et figurant ci-dessous et, en cochant la case, j'ai aussi indiqué ci-dessous toute demande étrangère de brevet, tout certificat d'inventeur ou toute demande internationale PCT ayant une date de dépôt précédant celle de la demande à propos de laquelle une priorité est revendiquée.

Prior foreign application(s)  
Demande(s) de brevet antérieure(s)

<u>02 08005</u>	<u>FRANCE</u>
(Number)	(Country)
(Numéro)	(Pays)

_____	_____
(Number)	(Country)
(Numéro)	(Pays)

Je revendique par le présent acte tout bénéfice, en vertu du Titre 35, § 119(e) du Code des Etats-Unis, de toute demande de brevet provisoire effectuée aux Etats-Unis et figurant ci-dessous.

_____	_____
(Application No.)	(Filing Date)
(N° de demande)	(Date de dépôt)

_____	_____
(Application No.)	(Filing Date)
(N° de demande)	(Date de dépôt)

Je revendique par le présent acte tout bénéfice, en vertu du Titre 35, § 120 du Code des Etats-Unis, de toute demande de brevet effectuée aux Etats-Unis, ou en vertu du Titre 35, § 365(c) du même Code, de toute demande internationale PCT désignant les Etats-Unis et figurant ci-dessous et, dans la mesure où l'objet de chacune des revendications de cette demande de brevet n'est pas divulgué dans la demande antérieure américaine ou internationale PCT, en vertu des dispositions du premier paragraphe du Titre 35, § 112 du Code des Etats-Unis, je reconnais devoir divulguer toute information pertinente à la brevetabilité, comme défini dans le Titre 37, § 1.56 du Code fédéral des réglementations, dont j'ai pu disposer entre la date de dépôt de la demande antérieure et la date de dépôt de la demande nationale ou internationale PCT de la présente demande :

<u>PCT/FR03/01918</u>	<u>23 JUNE 2003</u>
(Application No.)	(Filing Date)
(N° de demande)	(Date de dépôt)

_____	_____
(Application No.)	(Filing Date)
(N° de demande)	(Date de dépôt)

Je déclare par le présent acte que toute déclaration ci-incluse est, à ma connaissance, véridique et que toute déclaration formulée à partir de renseignements ou de suppositions est tenue pour véridique; et de plus, que toutes ces déclarations ont été formulées en sachant que toute fausse déclaration volontaire ou son équivalent est passible d'une amende ou d'une incarcération, ou des deux, en vertu de la Section 1001 du Titre 18 du Code des Etats-Unis, et que de telles déclarations volontairement fausses risquent de compromettre la validité de la demande de brevet ou du brevet délivré à partir de celle-ci.

I hereby claim foreign priority under Title 35, United States Code, § 119(a)-(d) or § 365(b) of any foreign application(s) for patent or inventor's certificate, or § 365(a) of any PCT International application which designated at least one country other than the United States, listed below, and have also identified below, by checking the box, any foreign application for patent or inventor's certificate, or PCT International application having a filing date before that of the application on which priority is claimed.

Priority Claimed  
Droit de priorité revendiqué  
Yes/Oui No/Non

<u>JUNE 27, 2002</u>
(Day/Month/Year Filed)
(Jour/Mois/Année de dépôt)

_____
(Day/Month/Year Filed)
(Jour/Mois/Année de dépôt)

I hereby claim the benefit under Title 35, United States Code, § 119(e) of any United States provisional application(s) listed below.

I hereby claim the benefit under Title 35, United States Code, § 120 of any United States application(s), or § 365(c) of any PCT International application designating the United States, listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States or PCT International application in the manner provided by the first paragraph of Title 35, United States Code, § 112, I acknowledge the duty to disclose information which is material to patentability as defined in Title 37, Code of Federal Regulations, § 1.56 which became available between the filing date of the prior application and the national or PCT International filing date of this application.

<u>PENDING</u>
(Status: patented, pending, abandoned)
(Statut : breveté, en cours d'examen, abandonné)

_____
(Status: patented, pending, abandoned)
(Statut : breveté, en cours d'examen, abandonné)

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

## French Language Declaration

POUVOIRS : je désigne par les présentes tous avocats de SUGHRUE MION, PLLC énumérés sous le Numéro de Client USPTO figurant ci-après comme mes avocats pour poursuivre la présente procédure et traiter avec l'Office des brevets et des marques (*Patent and Trademark Office*) toute affaire en liaison avec celle-ci, reconnaissant formellement que les avocats spécifiques énumérés sous ce Numéro de Client peuvent être modifiés à tout moment, à la discrétion exclusive de Sughrue Mion, PLLC, et demande que toute correspondance relative à la demande soit adressée à l'adresse mentionnée sous le même Numéro USPTO.

POWER OF ATTORNEY: I hereby appoint all attorneys of SUGHRUE MION, PLLC who are listed under the USPTO Customer Number shown below as my attorneys to prosecute this application and to transact all business in the Patent and Trademark Office connected therewith, recognizing that the specific attorneys listed under that Customer Number may be changed from time to time at the sole discretion of Sughrue Mion, PLLC, and request that all correspondence about the application be addressed to the address filed under the same USPTO Customer Number.

WASHINGTON OFFICE

**23373**

CUSTOMER NUMBER

Adresser tout appel téléphonique à : (*nom et numéro de téléphone*)

SUGHRUE MION, PLLC  
+1 (202) 293-7060

Direct Telephone Calls to: (name and telephone number)

SUGHRUE MION, PLLC  
+1 (202) 293-7060

Nom complet de l'unique ou premier inventeur	Full name of sole or first inventor <b>Vigen ARAKELYAN</b>
Signature de l'inventeur	Inventor's signature <i>V. Arakel.</i>
Date	Date <i>27/12/04</i>
Domicile	Residence C/o SIDEL, avenue de la Patrouille de France 76930 OCTEVILLE-SUR-MER FRANCE
Nationalité	Citizenship FRENCH
Adresse postale	Mailing Address 76930 OCTEVILLE-SUR-MER FRANCE
Nom complet du deuxième co-inventeur, le cas échéant	Full name of second joint inventor, if any
Signature du deuxième inventeur	Second inventor's signature
Date	Date
Domicile	Residence
Nationalité	Citizenship
	Mailing Address